Optical Assembly Pathfinder (OAP)

- ***Specific Requirements***
  - Size of optic: 200mm tall x 440 μm thick (glass + epoxy)
  - Aluminum segment housing
  - One P and One H segment, inner module, 60^{o}
  - One optic in each P and H segment
  - Must move/hold optic in 10 locations (5 top and 5 bottom)
  - Must be able to introduce axial tilt to align optical axis.
  - No environmental testing

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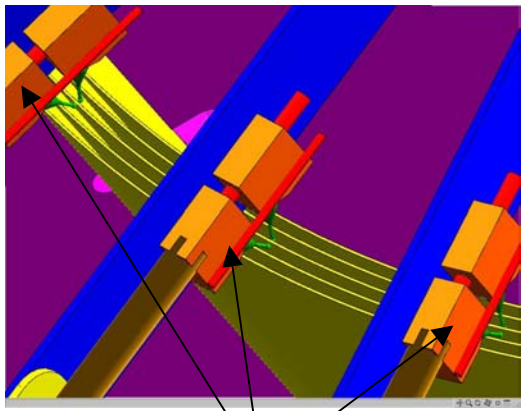
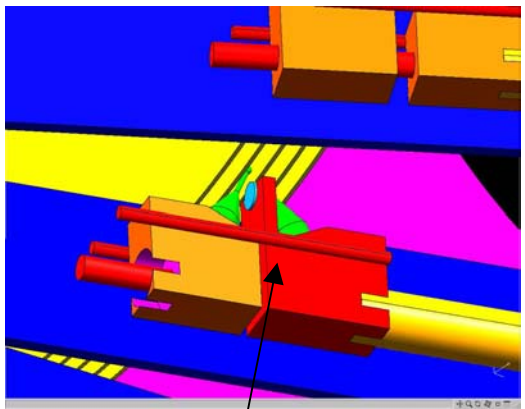
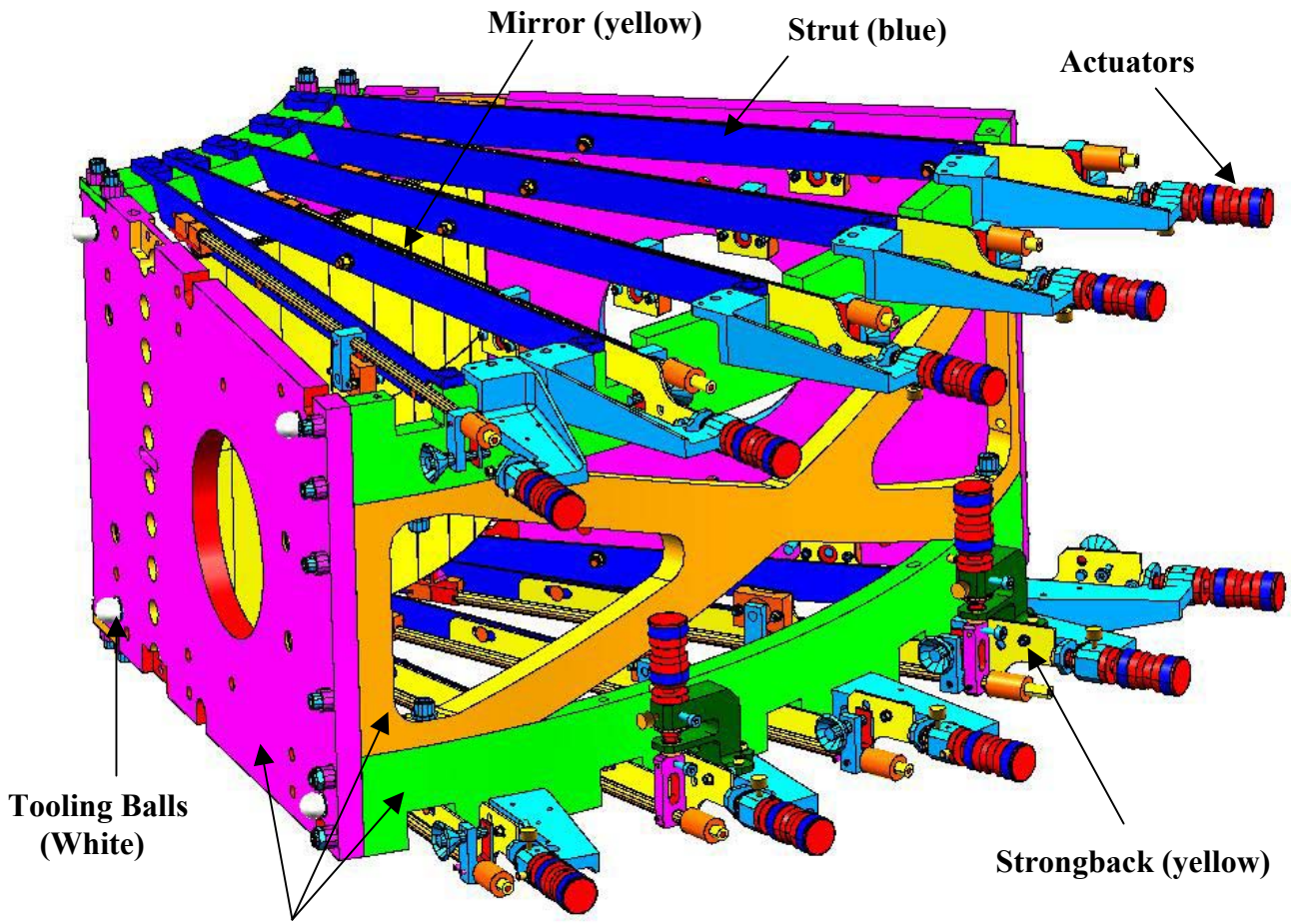
Mirror Mounting



Mirror Mounts (8 places)



Axial Tilt Mirror Mounts (2 places)



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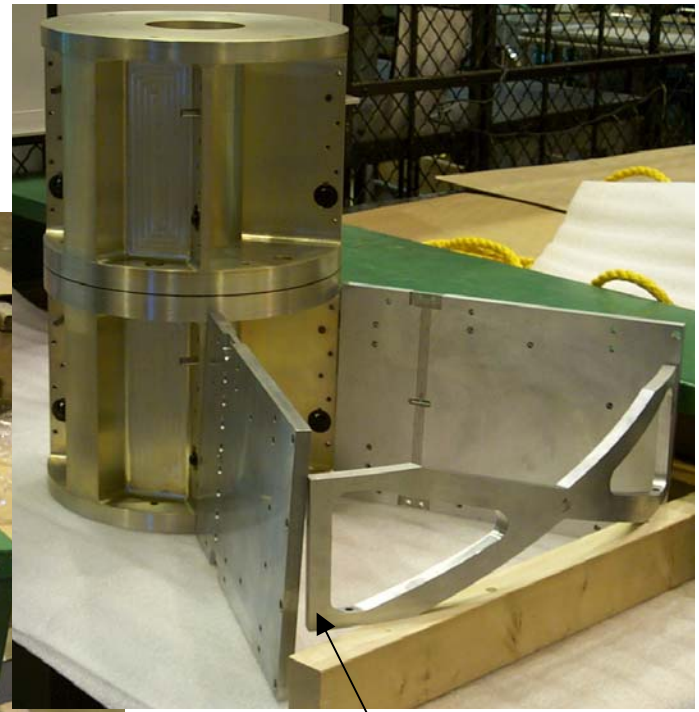

Reference Cylinder

Housing Back

Housing Sides

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Two Phases of Alignment:

1. Radius Gage - Use Fixed CMM and Faro Arm to place mirror within capture range of CDA (+/- 0.001”).

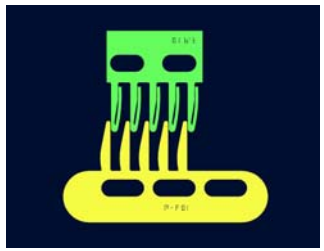
2. CDA Alignment - Optically align mirrors. Sub-micron tolerance. See Paul Glenn’s presentation.

Future Work

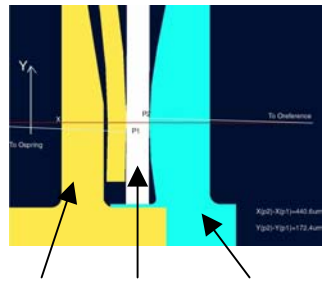
- Multiple mirror alignment and Mass Production

- MIT designs and fabricates silicon "combs;" accurate to 0.1μm
- Purpose: precision radial location of mirrors.

Reference or "stop" comb



Comb pair as etched from wafer



- Composite Module Housings and Full-up Structure